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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/325,110	06/03/1999	CARL S. ANSELMO	PD-990033	2415

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HUGHES ELECTRONICS CORPORATION
PATENT DOCKET ADMINISTRATION
BLDG 001 M/S A109
P O BOX 956
EL SEGUNDO, CA 902450956

EXAMINER
CHOW, CHARLES CHIANG

ART UNIT	PAPER NUMBER
2684	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/325,110	Applicant(s) C. Anselmo
	Examiner Charles Chow	Art Unit 2684

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *Jun 3, 1999*

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above, claim(s) _____ is/are withdrawn from consideratio

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1-21* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirement

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examine

If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☐ All b) ☐ Some* c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

a) ☐ The translation of the foreign language provisional application has been received.

15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____
4) ☐ Interview Summary (PTO-413) Paper No(s). _____
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

Detailed Action

1. Notice of the information disclosure statement in applicant's letter, June 2, 1999, stating the applications 08/867,672, 09/159,332, are belonging to the assignee, Hughes Electronics Corporation.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sherman et al. (US 6,021,309) in view of Floury et al. (US 5,963,845).

Regarding **claim 1**, Sherman discloses a system for providing high frequency data communications (system in abstract, col. 8, line 32, and the packet based TDMA, in gigahertz, col. 2, lines 62-66) in satellite-based communications network (network in front figure, Fig. 1, gateway 56, local telephone exchange). The system comprises plurality of satellites (22, 24, 26, Fig. 1). Sherman discloses each satellite having uplink and downlink antennas capable of receiving and transmitting a plurality of signals (up/down links for 36, 38, 40, 42, 48, 50 in Fig. 1; col. 9, lines 65 to co. 10, line 2; col. 10, lines 24-31). Sherman discloses the reconfigurable satellite from the bi-weekly minute-by-minute allocation plans and the frequency allocation (abstract, front figure, channel allocation model 206; col. 11, lines 13-24, channel allocation based upon policy, interference, capacity).

Sherman fails to indicate the details of the control circuit.

Floury teaches the control circuit (Fig, 4, 5, TC1-16, col. 9, lines 22-28). Floury teaches the satellite has the programmable frequency synthesizer (the reconfigurable frequency synthesizer adapted to change the frequencies upon receiving the command from the ground station, col. 9, lines 28-38, col. 12, lines 29-46).

Floury teaches a controller located on said satellite coupled to said communications control circuit (Fig. 4, col. 4, lines 28-37, the TC1 to TC16, OL11-OL161, for controlling the frequency converters in the transponder; the receiving configuration command from the ground to control the frequencies). Floury teaches the controller controlling a frequency reconfiguration of said communications control circuit through said programmable frequency synthesizer (the reconfigurable frequency synthesizer for command from the ground controller, as shown in col. 4, col. 9, col. 12 above). It is apparently, obviously, an improvement to reduce the large number of channel conversion in the spacecraft satellite, such that the satellite payload-equipment could function efficiently with less crosstalk and channel interference (col. 3, line 2; col. 3, lines 20-30). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify and add Floury's satellite with transparent channel-frequencies selected from other plurality frequencies, to Sherman, such that the system could be adapted to change the frequencies, to save a large number of frequency conversions, and to reduce the channel interference.

(Beside, in cited below, Thompson et al. teaches the configurable satellite also).

3. Claims 2-5, 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sherman in view of Floury, and further in view of Wiswell et al. (US 6,205,319 B1).

In the above, it does not include the beam forming network.

Wiswell teaches, **claim 2**, the comprising a beam forming network coupled to uplink and downlink antenna (front figure, the receive/transmit beam phased array 102-108, 120-126; up/down converter 110) for the selectively adjusting of the amplitude and phase antenna beam for receiving/transmitting information (abstract, col. 1, lines 5-9; col. 2, lines 27-30), using ewer multi-beam antennas (col. 1, line 65 to col. 2, line 2; col. 2, lines 8-15). Apparently, using fewer components, to optimize the multi-beam-antennas, is obviously an improvement. By doing so, the satellite would reduce the payload complexity, and the power requirement using fewer beam antennas. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify and add Wiswell's fewer beam phased array antennas for receiving and transmitting, to Sherman as modified above, such that the satellite payload would be efficient, with less complexity and save power requirement.

Regarding **claim 3**, referring to claim 2 above, Wiswell considered the control circuit of the up/down converters 110, the Lo/frequency generator 134, the payload computer 132 (front figure).

Regarding **claim 4**, referring to examiner's comment in claim 1 above, Floury taught the transponder for the control circuit (plurality of transponders receiving/transmitting

microwave signals, col. 1, lines 7-8; Ku band transponder, col. 1,line 26; transponder in Fig. 2A, the circuitry connected to B-B' of Fig. 2D).

Regarding **claim 5,** referring to examiner's comment in claim 1 above, Floury also taught the up/down converter for transponder in Fig. 2A, the circuitry connected to B-B' to Fig. 2D, the down conversion followed by up conversion.

Regarding **claim 7,** Wiswell teaches, the comprising a packet switch (packet switch, router 114, the FPS; the switch routing of information to particular region of interest, col. 4, lines 38-50, col. 4, lines 54-64). To add a packet switch for the receiving and transmitting antenna phase array is apparently providing the efficiency for information routing. Obviously by doing so, the information could be efficiently, immediately routed from the receiving to the transmitting phase array antennas, for the region of particular interest. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify and add Wiswell's packet switch router 114, to Sherman as modified above, such that the system could be efficiently route the particular information.

4. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sherman in view of Floury, and further in view of Black et al. (US 6,377,561 B1).

In the above, it does not include the time division multiple access switch.

Black teaches, **claim 6,** the control circuit comprising a time division multiple access switch (Fig. 6b satellite 67 comprises the switch for the source terminal/destination terminal having

data stream 63-65, 68, uplink scheduler. The TDMA formats are supported also (col. 19, line 53-54; col. 19, line 55; col. 19, line 11-14; col.19, lines 17-25). The optimized multi-media network TDMA switch having the optimized dynamic bandwidth-on-demand for data communication is obviously a good feature for routing the packet data. By doing so, it is obviously providing a high performance network-access system, using the dynamic bandwidth-on-demand TDMA switch. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify and add Black's bandwidth-on-demand TDMA switch, to Sherman as modified above, such that the system could efficiently route the packet using the flexible resource-allocation from the scheduler's optimized bandwidth-on-demand to adjust the spot beam (abstract, bandwidth on-demand, col. 2,line 22-27; col. 2, line 40-46).

5. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sherman in view of Floury, and further in view of Galvin (US 6,182,927 B1).

In the above, it does not include the satellites for LEO, MEO, GSO

Galvin teaches, **claim 8**, the satellites for LEO, MEO, GSO (col. 6, lines 34-54, the low earth orbit satellites 50, GEO 52, the MEOs in Fig 6) for improving the satellite navigation accuracy (col. 2, line 47). By doing so, to add the augmentation satellites in LEO, or MEO or GEO, the navigation accuracy could be improved (col. 6, lines 34-37). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify and

add Galvin's adding different augmentation satellites, to Sherman as modified above, such that the system could be provide the navigation accuracy.

6. Claims 9-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sherman in view of Floury, and further in view of Wiswell et al. (US 6,205,319 B1).

Regarding **claim 9,** Wiswell taught the receiving phase array antennas and the beam forming network for receive/transmit arrays, as shown in front figure, col. 5, lines 55-60; col. 5, line 56 to col. 6, line 4, as shown above. Referring to the examiner's comment in claim 1 above for the control circuit; the reconfiguration circuit is coupled to the communication circuit.

Regarding **claim 10**, refer to examiner's comment in claim 3 above, which also provides the claimed features for the controlled up/down converter.

Regarding **claim 11**, refer to examiner's comment in claim 3 above, which also provides the claimed features for the transponder.

Regarding **claim 12**, refer to examiner's comment in claims 1, 3 above, which also provides the claimed features for the transponder having the up/down converter in Floury, Wiswell.

Regarding **claim 13**, refer to examiner's comment in claim 3 above, which also provides the claimed features for the programmable synthesizer coupled to up/down converter.

Regarding **claim 14**, Floury teaches the on-board computer (the digital signal processors

in his claims 10, 18, 20; DSP1-16 in col. 9, lines 51-59, for controlling the transparent channel frequency selection; also Wiswell teaches the payload computer 132 in front figure for configuring the phased array antennas).

Regarding **claim 15**, refer to examiner's comment in claim 6 above, which also provides the claimed features for the routing tables (Fig. 7b; the link table update control and on board network controller, col. 18, lines 16-18).

Regarding **claim 16**, refer to examiner's comment in claim 6 above, which also provides the claimed features for the time multiple access switch.

Regarding **claim 17**, refer to examiner's comment in claim 7 above, which also provides the claimed features for the packet switch.

7. Claims 18-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sherman in view of Floury, and further in view of Reesor (US 4, 472,720).

In the above, it does not include the repositioning a satellite.

Reesor teaches, **claim 18**, the repositioning a satellite from a network and moving the reconfigurable satellite into the network position (repositioning of the satellite based upon the phase error detected from the tone transmitted from the master satellite to the slaved satellites, abstract, front figure, Reesor's claim 2, repositioning satellites determined by correction signal). To synchronize the phase of the received signal to improve the signal quality is obviously a essential features to be included, such that the phase error could be reduced by repositioning the satellites. Therefore, it would have been obvious to one of

ordinary skill in the art at the time of invention to modify and add Reesor's repositioning, reconfiguring the positions of satellites, to Sherman as modified above, such that the phase error could be reduced.

Regarding **claim 19**, refer to examiner's comment in claim 1 above, which also provides the claimed features for the changing the up/down frequency.

Regarding **claim 20**, refer to examiner's comment in claim 1 above, which also provides the claimed features for the changing of the frequency in a programmable synthesizer.

Regarding **claim 21**, Wiswell taught the changing the amplitude or phase of the transmit/receive beam (abstract, and beam array antennas in front figure).

Conclusion

8. In the above discussion, Sherman discloses the system and the packet based TDMA, in gigahertz having the network gateway 56, local telephone exchange. The system comprises plurality of satellites. Sherman discloses each satellite having uplink and downlink 36, 38, 40, 42, 48, 50. Sherman discloses the reconfigurable satellite from the bi-weekly minute-by-minute allocation plans and the frequency allocation based upon policy, interference, and capacity. Floury teaches the satellite with transparent channel-frequencies selected from other plurality frequencies. Wiswell teaches the adjusting of the amplitude and phase of the beams for the receiving/transmitting phase array antennas, the packet route switch, the fewer beam phased array antennas. Black teaches the bandwidth-on-demand TDMA switch, the route table, the digital signal processors. Galvin teaches the augmentation satellite LEO, or MEO, or GEO. Reesor teaches the repositioning, reconfiguring the positions of satellites.

9. The cited pertinent prior arts are listed below:

   A. US 2001/0034,206 A1, October 2001 (filed on December 23, 1998), *Thompson et al. teaches the reconfigurable satellite frequencies and reconfigurable phase array antennas (title, [0032, 0033, 0035], claims 1, 7, 8, 11-16, and the first/second frequency synthesizers in claim 7).*

   B. US 5,519,404, May 1996, Cances et al. teaches the satellite network allocating free communication channel for the satellite to provide the beam coverage (front figure, abstract, Fig. 5, col. 5, lines 60-62, frequency re-use; coverage reconfiguring).

   C. US 5,962,758, July 1999, Grybos et al. teaches the satellite radio frequency updated frequently and stored in on board of each satellite for operating the communication link (abstract, front figure, frequency use schedule algorithm 48, frequency use schedule table, time-frequency).

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles Chow whose telephone number is (703)-306-5615.
    If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel Hunter, can be reached at (703)-308-6732.
    Any response to this action should be mailed to:

    Commissioner of Patents and Trademarks

    Washington, D.C. 20231

    or faxed to: (703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

Charles Chow

May 1, 2002.

DANIEL HUNTER
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600